

SUBMISSION NO. : 124737
ATTORNEY : Kurisko, Mark A.
Title :

Power-Management Scheme For Wireless LANs Optimized For Periodic Interactive Applications

-----MAIN INFORMATION-----

ITEM STATUS	: Open	AGERE RATING	: II
STATUS DATE	: [REDACTED]	GOVT. CONTRACT	: N
OPEN DATE	: [REDACTED]	TYPE	: Patentability
CLOSE DATE	:	DEADLINE DATE	:
CLASS CODE	: II	TECHNOLOGY	:
BU CODE(S)	:		

-----SUBMITTER INFORMATION-----

SUBMITTER NAME : Kampen, Harald van
COMPANY : NONE
LOCATION :
EXTENSION :
DEPARTMENT :
DIRECTOR :

SUBMITTER NAME : Monteban, Leo
COMPANY : AGERE
LOCATION :
EXTENSION : 31 306097526
DEPARTMENT : SYSTEM -TI
DIRECTOR : C. Links/V. Hayes

Brief Description:

Key attributes of the ITPM scheme are the spreading of delivery away from the crowded Beacons, the coinciding of upstream and downstream frame transmissions and the reduction in polling overhead.

LAW DEPARTMENT USE ONLY	
Docket No.	124737
Date Received	[REDACTED]
Attorney	Mark Kurisko

INVENTION DISCLOSURE RECORD

PREPARATION & ROUTING INSTRUCTIONS

Complete and fill in every item. Write "none" or "unknown", if appropriate.
Use an additional blank page for any item where more space is needed.

Have your manager review and sign (Items 9 and 10) before submitting to Vic Hayes, Patent Liaison WCND.

Vic will submit original to: Mark Kurisko, Agere Systems, Law department (CCLAW)

1247 S Cedar Crest Blvd. (59-115P Allentown, PA 18103-6209, USA. Keep one copy for your file.

(1) Inventor(s)	Facility	Department	Phone Number
Harald van Kampen	Nieuwegein	CTO A&S	+31 30 60 96 585
Leo Monteban	Nieuwegein	CTO A&S	+31 30 60 97 526

(2) Title of Invention

Power-management scheme for wireless LANs optimized for periodic interactive applications

(3) Product, Project Name or Class

Number
Unknown U103-14

(4) Date invention was First Conceived

[REDACTED]

(5) Actual or Anticipated Date of First Product Sale,
Customer Availability, or Public Disclosure

Unknown

(6) Description of the Invention

Please attach additional pages providing the following:

- Statement of problem solved by the invention - Briefly state the problems your invention solves, its purposes and advantages, and how it differs from prior designs that you are aware of.
- Description of the invention - Describe your invention in detail. Include and refer to sketches or diagrams and, if appropriate, attach documents such as previously prepared descriptions or specifications.
- Summary of Invention - State what you regard at the present as the key inventive concept - i.e., the gist of your invention.

(7) Inventor Signature(s) (Each person listed in Item 1 above is an inventor and must sign and date.)

Signature of Inventor H. van Kampen	Date	Signature of Inventor	Date
Signature of Inventor L. Monteban	Date	Signature of Inventor	Date

(8) Witness Signatures (Two persons who are not inventors must read and understand this disclosure, and then sign and date.)

Signature of Witness H. Moelard	Date	Signature of Witness R. van Leeuwen	Date
------------------------------------	------	--	------

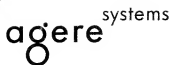
FOR MANAGER USE ONLY

- (9) Strategic Value of Patent Coverage (State what you regard as the strategic value to your business unit of having a patent for this invention - e.g., licensing revenue, preventing use by others, importance/breadth of the invention, etc.)
The patent for this invention may contribute to Agere's licensing revenue income. The invention is an improvement on the IEEE 802.11 standard and can add significantly to the performance of higher layer protocols, and as such is a valuable feature in our own products and other manufacturers' products.

(10) Reviewed and approved by

Signature of Manager	Date	Manager Name (Please print) Bruce Tuch	Tentative Rating * (A, B, C, D, or U) B
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* Ratings of "A" through "D" indicate relative value, with "A" being highest and "D" being lowest.
A rating of "U" indicates the value is unknown.



Invention Submission

Title of Invention: Power-management scheme for wireless LANs optimized for periodic interactive applications

Please use a new form for each inventor

Last Name: Van Kampen	First Name: Harald	Middle Name:
Third Name:	N.I. Number or Social Security Number or Tax Number or Employee number): (HR-ID) 1001446	
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Nationality: Netherlands	Type of Employment: Permanent	
Company Name of Employer: Agere Systems Nederland B.V.	Director's Name: R. Torten or S. Swearingen	
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Attorney: Mark Kurisko	Attorney Ref.:
Kind: NEW 12-Month CIP DIVISIONAL Other:	Classification Code (I, II, III or IV):
Country Coverage:	
Applicant: Agere Systems Inc.	

IDS Number:	IDA Number:	Case Name and Number:
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Title of Invention: Power-management scheme for wireless LANs optimized for periodic interactive applications

Last Name: Monteban	First Name: Leo	Middle Name:
Third Name:	N.I. Number or Social Security Number or Tax Number or Employee number: (HR-ID) 5938669	
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Nationality: Netherlands		Type of Employment: Permanent
Company Name of Employer: Agere Systems Nederland B.V.		Director's Name: R. Torten or S. Swearingen
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Attorney: Mark Kurisko	Attorney Ref.:
Kind: NEW 42 Month CIP DIVISIONAL Other:	Classification Code (I, II, III or IV):
Country Coverage:	
Applicant: Agere Systems Inc.	

IDS Number:	IDA Number:	Case Name and Number:
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Interactive Traffic Power Management (ITPM):

A power management scheme for wireless LANs optimized for interactive applications with up and down traffic having the same periodicity.

Statement of problem solved by the invention

The power management scheme (ITPM) described in this IDR minimizes the power consumption for a specific class of applications that operate over a wireless LAN system. The class of applications is those where there is a stream of data messages with a periodicity that is similar for the uplink-, i.e. from the station (STA) to the access point (AP), and for the downlink direction. A good example of such an application is interactive voice-over-wireless-LAN, where the station is a handset.

The ITPM scheme offers the following improvements over existing and proposed power management schemes for wireless LANs [1,2,3]:

- No polling overhead
The traditional power management schemes [1] use a PS-Poll frame for the delivery of each buffered frame. This creates an overhead of one PS-Poll frame per delivered frame. Especially if the data frames of the application are small (such as in interactive voice), the PS-Poll overhead compared to the data throughput is large.
- Delivery of buffered frames outside the Beacon schedule
Where traditional power management schemes show a concentration of delivery of buffered frames straight after a Beacon, the ITPM scheme will spread the delivery of frames over the whole Beacon period.
- Efficient for short periodicity
While some enhanced power management schemes involve a so called holdover period after each transmitted or received frame to allow for bulk transfers to happen in a non-power-save mode, those schemes will typically not work when the periodicity of the frames to be transferred is small. The known enhanced schemes would have the effect that the station is constantly awake because the holdover expands across the periodicity. Moreover the ITPM scheme allows for periodicity which is smaller than the Beacon interval.
- Either AP or STA may decide on usage of a deliver opportunity
The usage of the deliver opportunity is very flexible. In one option the AP has full control when it delivers the buffered frames. It may choose to deliver all buffered frames in one deliver opportunity or only a subset, based on other traffic flows in the BSS it is supporting at that time. This allows the AP to control situations of mixed traffic and usage of protocols for Quality of Service. In another option the STA has control over the stream of frames being transmitted by the AP. The STA may then choose to receive all buffered frames in one deliver opportunity or only a subset depending on other STA-originating traffic flows.
- Delivery of uplink- and downlink traffic in one wakeup period
The existing power-management schemes allow stations to wake up for transmitting and receiving frames separately. The ITPM scheme intrinsically combines these two operations within one wakeup period, thereby saving the power to wake up twice.

Description of the invention

The Interactive Traffic Power Management (ITPM) scheme builds on a number of provisions in the IEEE 802.11 standard protocols, and through its usage of these provisions allows for an easy implementation. The following are the basic principles of operation:

- A STA participating in the scheme supports a sleep state in which it uses a (very) low amount of (battery) power.
- An AP is capable of buffering frames for a STA that is known to be in sleeping state.
- STA and AP negotiate the use of the power-management scheme and the point at which the STA enters the sleep state and the AP starts buffering frames for the STA.

These are principles that are present in most schemes. The base standard defines a single Power Management bit in the Frame Control field present in all frames. This bit informs an AP on the state of a STA at the end of a frame exchange. Proposed new schemes [2] include an exchange of Action frames with new defined information elements to negotiate the start and/or end of an alternative power management scheme [2,3]. Furthermore the standard defines the use of a single More Data bit in the Frame Control field. In response to a PS-Poll request the AP informs the STA of the presence of more buffered frames with this bit. The ITPM scheme extends the use of this More Data bit.

The next new principles introduce the special behavior of ITPM.

- Delivery of buffered frames independent of the Beacon schedule.
This is a change from the original power management schemes and many derived schemes. These all work on the Beacons as the means for an AP to indicate that frames are buffered. A STA which sees that there is a frame buffered will then ask for this frame in the period after the Beacon. This tends to make the time right after the Beacon very busy. Spreading the delivery helps to spread the traffic more uniform over time. Proposed new schemes other than ITPM also aim at removing the power save delivery away from the Beacons [3].
- STA determines deliver opportunities for AP
This is a new principle. The STA initiates the start of a deliver opportunity for the AP by transmitting a frame to the AP and being prepared to stay awake after this frame. This initiation can be done at a fixed schedule or when a data frame is ready for transmission. Since not every data frame has to be polled the overhead of PS-Poll frames is reduced.
- Either AP or STA determines how long the deliver opportunity lasts.
This is a new principle. Either the AP or the STA has full control over the length of the deliver opportunity. The AP will

send the STA to sleep right away when there is no traffic pending. If there is traffic pending, the AP can determine how much it wants to send in this delivery opportunity. At the same time the STA is able to control the length of the stream in one deliver opportunity by requesting the AP to continue or discontinue this stream.

- The More Data bit is used by the AP and the STA to control the length of the deliver opportunity.
The More Data bit is available and defined for use in the original scheme where it informs a STA that it could poll for more frame deliveries. In the ITPM scheme, the bit has a similar function to inform the STA, but the added meaning is that it forbids the STA to go to sleep. Also the meaning of the More Data bit is extended such that the STA can inform the AP to continue or discontinue a data stream.
- STA can create deliver opportunity with a Null frame when it detects underrun in uplink traffic
By inserting a Null frame when there is an underrun in the expected periodic flow of frames destined for the AP, the STA creates a deliver opportunity for the AP.

Figure 1 illustrates the ITPM scheme principles using examples of frame-exchange sequences.

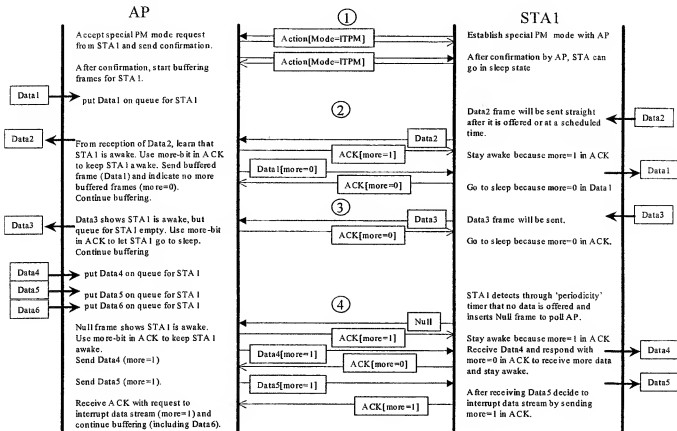


Figure 1 : Main approach for ITPM

Exchange 1 shows the negotiation which can be incorporated in Action frames as also used for the proposed APSD scheme of 802.11e [2,3]. The Handshake is simple. The STA informs the AP it wants to use ITPM and the AP confirms that ITPM is OK. After the confirmation the AP starts buffering and the STA starts sleeping.

Exchange 2 shows the situation where both the STA and the AP have a frame ready for transmission. The STA will wake up and transmit the frame. The AP will now get a deliver opportunity. Since the AP has one data frame buffered it will instruct the STA to stay awake by using the More Data bit in the ACK frame. Next it schedules the buffered frame for transmission and indicates in that frame that no more data is buffered. The STA responds with a 'regular' ACK having the More Data bit set to 0.

Exchange 3 shows a situation where there is no frame buffered at the AP. The AP tells the STA to immediately go to sleep by using the More Data bit in the ACK, resulting in a minimal awake time for the STA.

Exchange 4 shows three more principles. Here the STA detects that there is an underrun in the upstream traffic (based on the 'periodicity' timer) and inserts a Null frame. The AP in this example has three buffered frames and starts sending them one by one. The STA responds with an ACK having the More Data bit set to 0; in the ITPM scheme the AP interprets this bit as a 'No More Data' bit. On receipt of the ACK frame, the AP assumes it may continue transmitting the frames that are buffered in the queue. After the second frame the STA decides the stream shall be interrupted and signals this to the AP in the last ACK having the More Data bit set to 1.

Notice that the AP also could have chosen to hold the second frame until the next deliver opportunity by setting the More Data bit to 0 in the first frame. Reasons to do so could for instance be that there is other high priority traffic pending at the AP destined for other stations.

As can easily be observed, the scheme works best for a situation where there is a constant and evenly spread stream of up- and downlink traffic. In such situation, there will be each time one upstream frame creating a deliver opportunity for one downstream frame. This would show as a continuous flow of exchanges of type 2 in the figure. The added efficiency

is that the STA only wakes up once for the whole exchange instead of waking up separately for the transmit and separately for the receive as is proposed in some other schemes.

The STA will have the Power Management bit ON in all frames it sends.

The invention makes the following enhancements to the defined 802.11 standard:

Syntax:

1. The More Data bit can be ON in an ACK frame.
2. The More Data bit can be inserted in the frames originating from the STA

Semantics:

1. The More Data bit in AP-originated frames explicitly calls the STA to stay awake to receive unicast frames. This is comparable to the standard use of this bit in Broadcast/Multicast frames, but there the STA does not have the obligation to stay awake as it may choose to ignore broadcasts.
2. The More Data bit in STA-originated frames explicitly requests the AP to continue (bit is 0) or discontinue (bit is 1) the stream. This usage and interpretation of the More Data bit is an extension to the 802.11 standard. Note that for this case the meaning of the More Data bit is reversed because of compliancy with current implementations where an AP always receives an ACK with More Data bit set to 0 and still continues sending buffered frames.

The ITPM principles as described above are based on the usage of the More Data bit in the ACK frame sent by the AP or STA. This implies behavior that is not compliant with the current 802.11 standard. An alternative approach for ITPM is proposed that is compliant with the 802.11 standard and also suits the needs of a continuous flow of uplink and downlink frame exchanges. However, a few differences with the main approach exist:

- Use of PS bit to control sleep and awake periods of STA

In contrast to the main approach the STA notifies the AP of the state (power save or active) of the STA at the end of a frame exchange. This is done using the standard PS bit in the Frame Control field.

- STA controls both the start and the end of the deliver opportunity

Similar to the main approach the STA creates a deliver opportunity for the AP by transmitting a frame and informing the AP it is in active state. In all cases the STA also indicates the end of the deliver opportunity, and thus the start of the buffering by the AP again.

- No negotiation needed with with AP

The alternative approach for ITPM works within the boundaries of the existing 802.11 specifications. Also the AP does not have to be aware of the usage of this scheme by the STA.

- Additional Null frame needed when the AP does not have buffered data

In case the AP does not have data buffered for the STA at a deliver opportunity, the STA shall transmit a Null frame to inform the AP it will enter the sleep state again. In comparison with the main approach this may imply more overhead of Null frames. Besides, the STA is only able to determine the lack of buffered data frames by the elapse of a timer because the ACK transmitted by the AP does not contain information via the More Data bit.

Figure 2 illustrates the principles of the alternative approach for the ITPM scheme using examples of frame-exchange sequences.

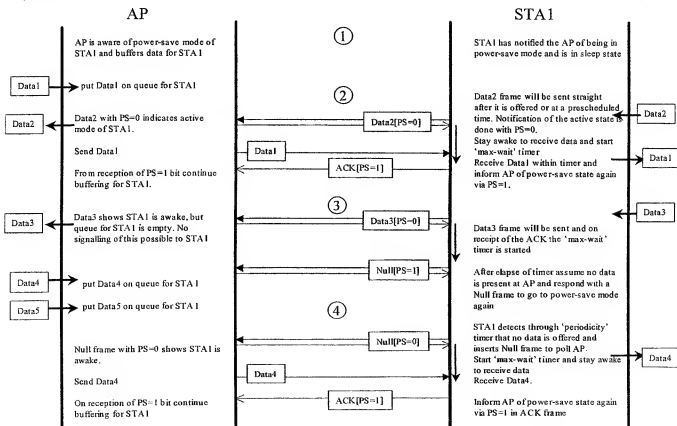


Figure 2: Alternative approach for ITPM

As starting point (1) for the alternative ITPM scheme the STA is in power-save mode (and sleeps). The AP is aware of the STA's state via the PS bit. No separate negotiation for the alternative approach has to be performed.

Exchange 2 shows the situation where both the STA and AP have a single frame buffered for transmission. In the transmission of a frame (Data2) by the STA, the AP is notified of the active state by setting the PS bit to 0. In response to this frame the AP transmits an ACK without any information whether data frames are buffered at the AP. At receipt of this ACK frame the STA starts a 'max-wait' timer. When the AP transmits the buffered frame (Data1) within this timer, the STA responds with an ACK. With this ACK the STA informs the AP it will go into power-save mode again (PS bit set to 1). The AP shall continue buffering for the STA again. The case for which Data1 is not transmitted within the 'max-wait' timer is explained in exchange 3.

Exchange 3 shows what happens when a frame is sent by the STA, however, the AP does not have any frame buffered for the STA or does not transmit a data frame within the 'max-wait' timer. After elapse of this timer the STA decides to send a Null frame to put itself to power-save mode again using the PS bit.

Exchange 4 shows the situation where the STA does not have data to send (underrun based on a 'periodicity' timer) and transmits a Null frame (with PS bit set to 0) to create a deliver opportunity for the AP. The AP again responds with the transmission of the first buffered frame (Data4). On response of this frame the STA transmits an ACK telling the AP it will go to sleep again (PS bit set to 1). The AP has to buffer Data5 for the next deliver opportunity. Note that the STA may also decide to stay awake and insert the PS=1 bit in the ACK of Data5.

As shown in the description above the alternative approach for ITPM is most efficient when at every deliver opportunity created there is at least one frame buffered for transmission at both STA and AP. Besides, the frame sent by the AP shall arrive at the STA within a predefined time limit. Thus the efficiency of the scheme is enhanced when the frames are sent with high priority.

Detection use of the invention

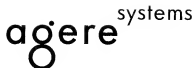
The usage of the ITPM scheme is easy to detect by observing the timing of upstream and downstream frame transmissions and the setting of the More Data bit (for the main approach) and the PS bit (for the alternative approach) in frames exchanged between an AP and a STA. Such observation can be easily done through the use of a sniffer tool.

Summary of invention

Key attributes of the ITPM scheme are the spreading of delivery away from the crowded Beacons, the coinciding of upstream and downstream frame transmissions and the reduction in polling overhead.

References

- [1] IEEE, "802.11, Wireless LAN Medium Access Control (MAC) and Physical Layer (PHY) specifications", November 1999
- [2] IEEE, "802.11e, Medium Access Control (MAC) Enhancements for Quality of Service (QoS)", draft D4.0 2002
- [3] M. Benveniste *et al.*, Proposed Normative Text for Simplified APSD, Doc nr. IEEE 802.11-03/107r1



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Outside Counsel
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Re: **IDS No.:** 124737
Managing Attorney
Mark Kurisko
Secretary
Rachel Panczyszin

(CLASS II)
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(610) 712-3757

Fax No.
(610) 712-3774

Dear Steve:

The above-referenced patent submission enclosed with this letter must be filed by **October 10, 2003** in accordance with Agere's general instructions for Outside Counsel, previously furnished to you. If, for any reason, you cannot meet the filing date requested, you **MUST** notify the Managing Attorney (MA) and me, VIA FACSIMILE, as soon as possible.

After the final claims have been drafted and you are therefore in a position to identify the inventors, please send "Request for Case Name/Number" (ATTACHMENT G), VIA FACSIMILE, to me at (610) 712-8544.

This invention has been initially reviewed and determined to have significant potential commercial value. Accordingly, a copy of the proposed application is to be sent to the MA prior to execution of the Declaration and Assignment; all other substantive papers such as amendments, appeal briefs, and the like are also to be sent to the MA prior to filing. The MA will notify you to proceed or contact you to discuss any requested changes, as appropriate. Furthermore, for continuity purposes, it is important that the **same** attorney that prepared the application be assigned to work on its continued prosecution. If otherwise, please advise.

This application will not be foreign filed.

If, during the prosecution of an application, you believe that a CPA/CIP, Divisional, Appeal, etc. should be filed, your advice should be presented to the Managing Attorney for concurrence, prior to commencement of any work.

Very truly yours,

A handwritten signature in black ink, appearing to read "Kyshon J. Rivers".

Kyshon J. Rivers

Enc.

RECEIVED **MENDELSON & ASSOC.**

To: "Monteban, Leo (leo)" <monteban@agere.com>
From: Yuri Gruzdkov <yuri@mendelip.com>
Subject: initial draft
Cc:
Bcc:
X-Eudora-Signature: <<No Default>>

Leo,

attached to this message is the initial draft of your application for your review. I am looking forward to receiving your comments soon.

If you could, please acknowledge receipt of this message.

Thank you,
--Yuri

2003 9 24 12:58 PM
Yuri Gruzdkov

To: "Monteban, Leo (leo)" <monteban@agere.com>
From: Yuri Gruzdkov <yuri@mendelip.com>
Subject: RE: initial draft
Cc:
Bcc:
X-Eudora-Signature: <<No Default>>

Leo,

thank you very much for your prompt response. I will make the changes you suggested.

Regarding the claims, here are a few comments that might help you in your analysis of the claims.

(1) To avoid a restriction requirement (i.e., when the USPTO asks you to essentially divide the application and pay additional examination fees), I drafted a broad independent claim that covers both embodiments. It has arguable novelty and deprives the examiner of the argument that we have two separate inventions here.

(2) While drafting claims, one has to keep in mind who the probable infringer might be. This is why we have

At 08:44 AM 9/25/2003 -0400, you wrote:

Some first feedback.

1. You did an excellent job in describing the concepts.
you even made a correction on some things I discovered as went over it

2. page 5 lines 29-30.

you say: "the AP does not need to be modified"

This may not be strictly true.

The usage of the PM-bit in the ACK sent by the STA to indicate to the AP that the STA will be going into doze state is not

covered

well in the standard. There may be AP implementations out there that would not work this way.

However, just reading the text in the base standard of 1999, the meaning of the PM-bit matches with what we have proposed in the

IDR.

3. page 8 line 1 example:

"a limitation in the product embodiment imposing a restriction on continuous time at which the current consumption needed for full awake power can be sustained"

so when you have a product whose power supply does offer the required power, but

only for a limited period of time at a time, you may need to go to sleep (say) after

a couple of milliseconds

I am not aware of concrete examples, but feel we should leave the control by the STA to interrupt the stream from the AP in the patent.

4. page 8 lines 8-9
you say "either AP or STA can create a deliver opportunity"

this is not strictly true.

The STA will offer the AP a deliver opportunity by sending a frame with the right

bit settings. The AP can grab the opportunity by setting the bits in the reverse direction appropriately or it can deny the opportunity by setting the bits the other way. Once it denies the opportunity, it must assume the opportunity is gone and start buffering until it hears a next opportunity from the STA.

So the STA is in control when the opportunity CAN be created. The AP is in control whether the opportunity ACTUALLY takes place.

I am still struggling to fully grasp all the claims.
Will let you know if I have more comments.

-----Original Message-----

From: Yuri Gruzdkov [mailto:yuri@mendelip.com]

Sent: Wednesday, September 24, 2003 6:59 PM

To: Monteban, Leo (leo)

Subject: initial draft

Leo,

attached to this message is the initial draft of your application for your review. I am looking forward to receiving your comments soon.

If you could, please acknowledge receipt of this message.

Thank you,
--Yuri

MENDELSON & ASSOCIATES, P.C.

INTELLECTUAL PROPERTY LAW

YURI GRUZDKOV, Ph.D.
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September 29, 2003

VIA FACSIMILE

Mark Kurisko, Esquire
Agere Systems Inc.
Room 12M-317
1110 American Parkway NE
Lehigh Valley Central Campus
Allentown, PA 18109

RE: U.S. Patent Application entitled "Power Management Method for
Wireless Communication Systems"
Case name: Kampen 1-13 IDS No.: 124737
Our Ref. No.: 992.1110

Dear Mark:

I am enclosing a draft of the above-referenced patent application for your review. This draft has been approved for technical accuracy and completeness by the inventors. Please let me know if you believe that any additional changes should be made to the application.

Very truly yours,



Yuri Gruzdkov
For MENDELSON & ASSOCIATES, P.C.

YAG:al
Enclosures

TRANSMISSION VERIFICATION REPORT

TIME : 09/29/2003 12:49
NAME :
FAX : 2155578477
TEL :

DATE, TIME
FAX NO./NAME
DURATION
PAGE(S)
RESULT
MODE

09/29 12:43
16107123774
00:06:26
26
OK
STANDARD
ECM

**FAX COVER SHEET**

29 September 2003

Page 1 of 26

FROM: Yuri A. Gruzdkov Email: yuri@mendelip.com	TO: Mark Kurisko, Esquire
COMPANY NAME: Mendelsohn & Associates, P.C.	COMPANY NAME: Agere Systems Inc.
PHONE NUMBER: 215-557-8544	PHONE NUMBER: 610-712-3754
FAX NUMBER: 215-557-8477	FAX NUMBER: 610-712-3774
Our Ref.: 992.1110	Case Name: Kampen 1-13 (IDS# 124737)

MESSAGE

Please see the attached.

To: "Monteban, Leo (leo)" <monteban@agere.com>
From: Yuri Gruzdkov <yuri@mendelip.com>
Subject: application(s) approved
Cc:
Bcc:
X-Eudora-Signature: <<No Default>>

Leo,

Mark Kurisko has reviewed your application and approved it for filing. One big change is that we will be filing two applications instead of one. Since the process is circular, filing two applications allows us to get a cleaner set of claims. The first application, looks at the process from the perspective of obtaining a deliver opportunity, while the other one looks at it from the perspective of managing the duration of that deliver opportunity and terminating it. The specification is the same for both, but the claims and summary sections are a little bit different reflecting the different perspectives. Also, the broadest independent claim for one application is included as a dependent claim in the other to complete the circle.

Other changes from the last draft that you reviewed are the ones that you suggested.

Please review the attached applications and let me know if you have any questions. Otherwise you may execute the paperwork and fax it to us. Amy Laudenslager of our firm will handle that.

Thank you for all your help and patience.

--Yuri
215-557-8544

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Attorney Docket No. Kampen 1.13

In re application of: Harald van Kampen; Leo Monteban

Serial No.:	<u>10/743,595</u>	Group Art Unit:	<u>2609</u>
Filed:	<u>12/22/2003</u>	Examiner:	<u>Leo Juvena W.</u>
Matter No.:	<u>992.1110</u>	Phone No.:	<u>571-270-1974</u>

For: Power Management Method for Creating Deliver Opportunities in a Wireless Communication System

DECLARATION UNDER 37 CFR 1.131

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

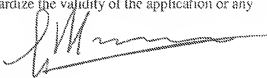
1. I am the applicant of the above-identified patent application and the inventor of the subject matter described and claimed therein ("the Invention").
2. The Invention was conceived prior to July 24, 2003.
3. Prior to July 24, 2003, I prepared an Invention Disclosure Record (IDR) on the Invention for purposes of review by a patent committee at Agere Systems, the assignee of the above-identified patent application (see Exhibit A).
4. Prior to July 24, 2003, the Outside Counsel Coordinator at Agere Systems forwarded disclosure materials to the law firm of Mendelsohn and Associates for the preparation and filing of a patent application directed to the Invention (see Exhibit B).
5. After July 24, 2003, but no later than September 24, 2003, I had a telephone conversation with patent attorney Yuri Gruzdkov from the law firm of Mendelsohn and Associates regarding the drafting of a patent application directed to the Invention.
6. On September 24, 2003, I received the initial draft of the patent application via email from Yuri Gruzdkov (see Exhibit C).
7. On September 25, 2003, I provided comments on the initial draft of the patent application via email to Yuri Gruzdkov (see Exhibit D).
8. On September 29, 2003, the revised draft was forwarded to managing attorney Mark Kurisko at Agere Systems for review (see Exhibit E).

9. From September 29, 2003, to December 19, 2003, the draft of the application was being reviewed by managing attorney Mark Kurisko at Agere Systems (see Exhibit F).

10. The above-identified application was filed on December 22, 2003.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

30 October 2007
Date



Leo Monteban